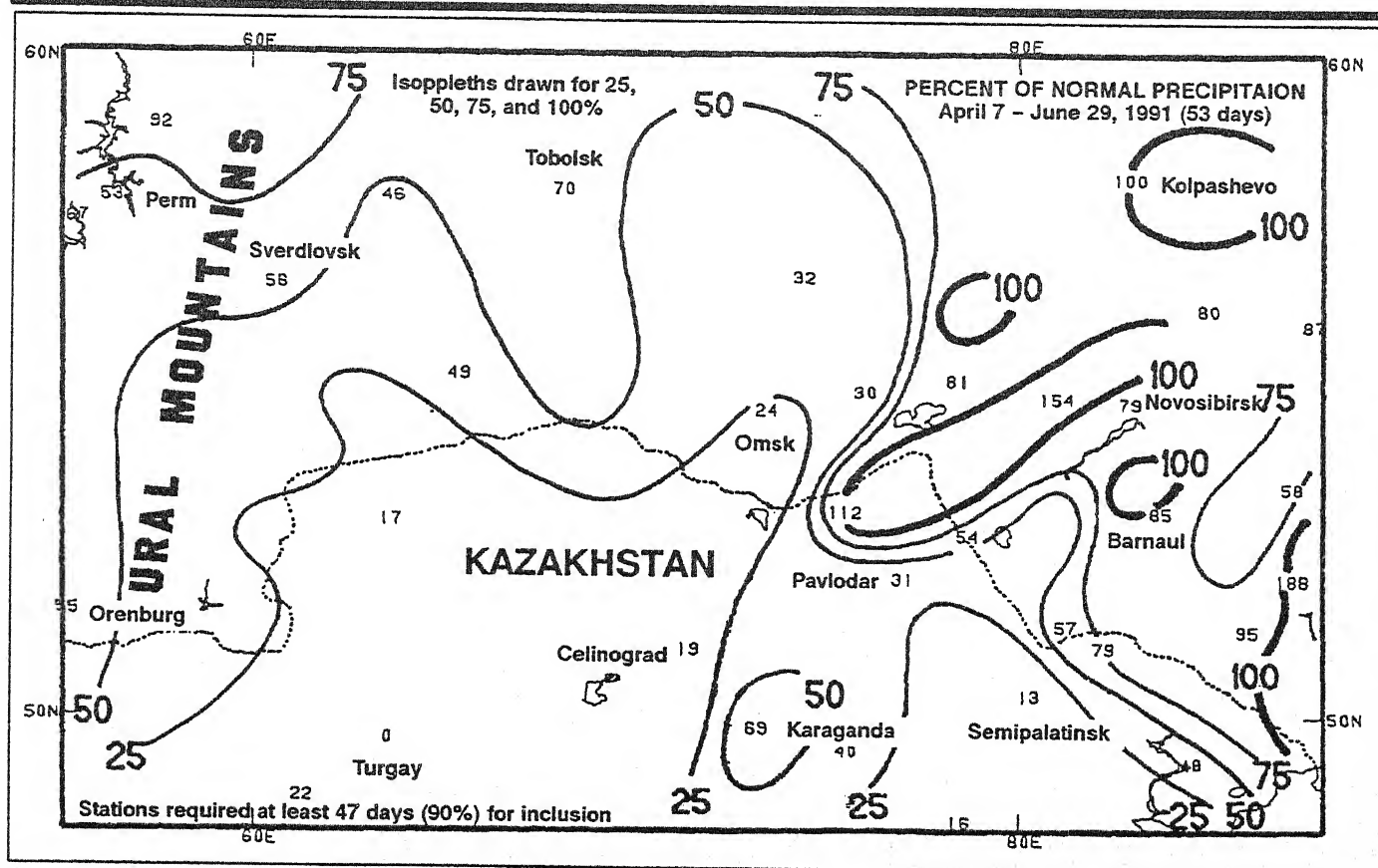


WEEKLY CLIMATE BULLETIN

No. 91/26

Washington, DC

June 29, 1991



Unseasonably warm and dry weather since early April has stressed spring grains across the central Soviet Union's New Lands. Many stations across the region have measured well under 100 mm during this period [inside back cover]. Much of Kazakhstan, the eastern Urals, and the western part of West Siberia have received less than half the normal precipitation since April 7, resulting in accumulated 12-week deficits of 50 to 75 mm. Aggravating the dryness has been prolonged, abnormal warmth as temperatures have averaged more than 4°C above normal across much of the area [inside back cover].



UNITED STATES DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER



WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF JUNE 29, 1991

1. Northwestern North America and Eastern Siberia:

ABNORMALLY WARM AIR INVADES REGION.

Temperatures averaged 3°C to 7°C above normal for the second consecutive week, with readings up to 31°C baking portions of interior Alaska. According to press reports, the heat combined with dry conditions to promote large wildfires across Alaska [2 weeks].

2. Southeastern United States:

MOISTURE SURPLUSES DIMINISH.

Primarily light rain fell across the central U.S., with scattered totals of 30–80 mm dampening parts of the Dakotas, Minnesota, eastern Montana, and western Nebraska. Little or no rain was reported across the rest of the Corn Belt and central Plains, bringing an end to the wet spell in that region. Farther south, however, totals of 50–150 mm, with isolated amounts up to 280 mm in central Alabama, kept the Deep South and Gulf Coast abnormally moist, with 80–280 mm of excess rainfall measured since early May [Ending after 14 weeks].

3. East-Central North America:

WARM WEATHER CONTINUES AS RAINFALL DEFICITS RISE.

Temperatures averaged 2°C to 5°C above normal in most areas, with the highest departures observed across the western Great Lakes and upper Midwest. The southeastern fringes of the region received some relief from at or below normal weekly temperatures [7 weeks]. In addition, dryness which began in early April across the mid-Atlantic and eastern Ohio Valley has expanded across southern sections of the Northeast, and the western Ohio Valley. Most locations have measured 50–100 mm below normal rainfall since early May [5 weeks].

4. Eastern South America:

ANOTHER WET WEEK.

The northern half of Uruguay, extreme northeastern Argentina, and southern Brazil measured another 50–100 mm of rain, keeping moisture surpluses of 85–225 mm across the region since early

May. Some relief was felt farther south, however, as only light rain fell on most of eastern Argentina [7 weeks].

5. Europe:

SEASONABLE TEMPERATURES PREVAILS.

The northern tier of continental Europe and southern Scandinavia experienced temperatures between 1°C and 3°C below normal while at or above normal temperatures affected the remainder of the continent [Ended after 5 weeks].

6. New Lands:

SEVERE RAINFALL SHORTAGES PERSIST.

Only scattered rainfall totals of 5–15 mm were measured, allowing dry conditions to intensify (see front and inside back covers for more details) [13 weeks].

7. Southern India:

MORE HEAVY RAINS REPORTED.

Inundating rainfall (90–435 mm) deluged the southern half of the west coast while 40–90 mm dampened most other locations. Fewer than 20 mm, however, brought improved conditions to extreme southeastern India and most of Sri Lanka. Since early May, up to 435 mm of excess rain has fallen in southwestern India [4 weeks].

8. Eastern China:

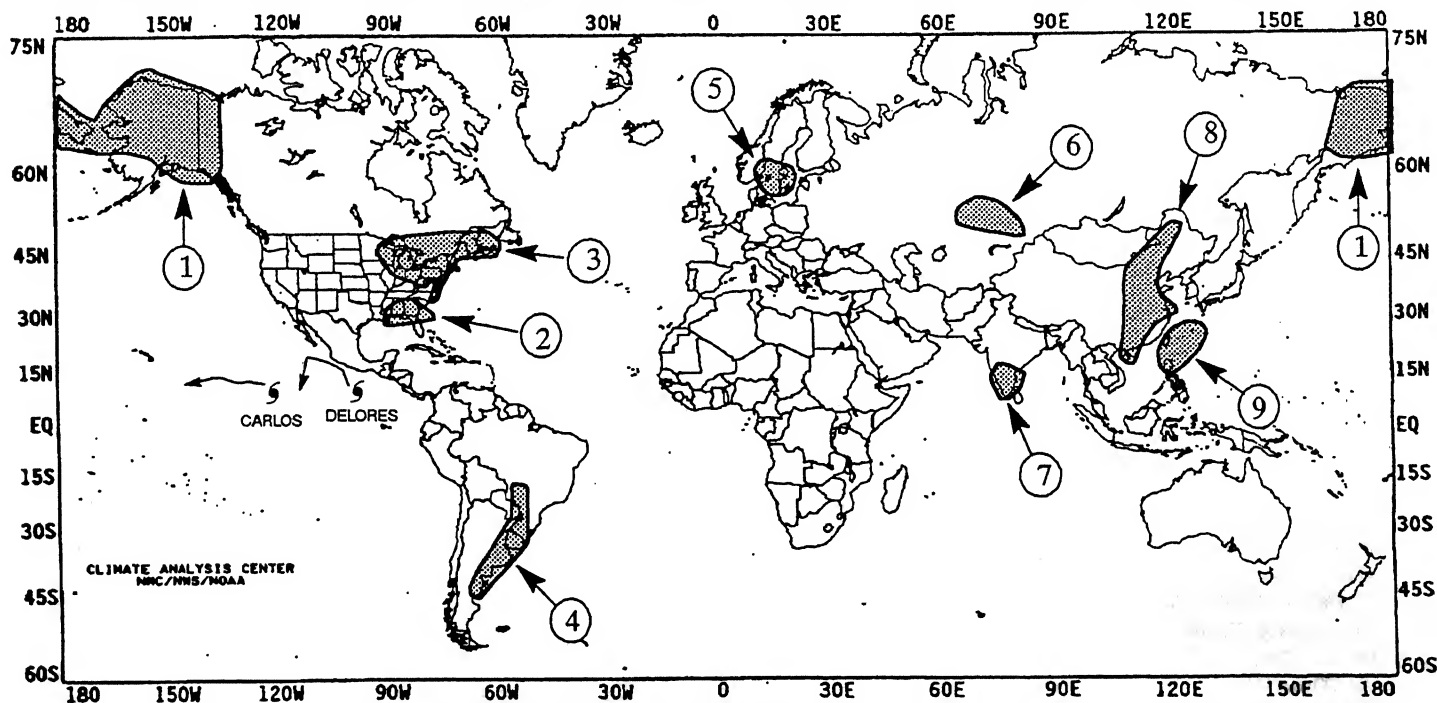
LOWER RAINFALL TOTALS OBSERVED.

Moderate rains (20–80 mm) fell across the Yangtze River Valley and northeastern China, with scattered heavier totals of 80–150 mm reported in the western Yangtze River valley and along the Yellow Sea coast. In contrast, little or no rain fell on south-central China, the Huang River valley, and Nei Mongol [Ending after 4 weeks].

9. Taiwan, The Ryukyus, and Luzon:

MORE SOAKING RAINS END SHORT-TERM DRYNESS.

Only scattered rainfall totals of 10–40 mm were reported across Luzon, but torrential cloudbursts brought 80–425 mm to the rest of the area, ending short-term dryness. Long-term deficits, however, remain across much of Taiwan, Luzon, and southeastern China, dating back to Fall 1990 [Ended after 8 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF JUNE 23 – 29, 1991

Severe thunderstorms spread across the northern High Plains and upper Great Lakes, producing isolated downpours, large hail, high wind, and tornadoes. Stream flooding washed out roads in northwestern North Dakota. Meanwhile, stormy weather raked the Southeast, lower Mississippi Valley, and southern Texas as up to 6 inches of rain in three hours flooded roads in central Alabama on Tuesday. Little or no rain fell on the remainder of the country. Abnormally dry conditions encompassed much of the upper Ohio Valley and northern and middle Atlantic Coast states despite scattered soaking rains at the end of the previous week (see Weekly Climate Bulletin, No.91/25, June 22, 1991, page 5). Rainfall totals since the beginning of the year are 20 to 50 percent below normal throughout the area. Hot weather prevailed from the southern High Plains across the central Plains and Great Lakes, and into the Northeast, where temperatures averaged more than 3°F above normal (page 3). High temperatures continued affecting Alaska as well, with weekly departures reaching 11°F in northern and central parts of the state. Record-breaking heat late in the week stifled the lower Great Lakes, New England, and the mid-Atlantic as temperatures soared into triple digits. In sharp contrast, chilly conditions set daily records in the Pacific Northwest and northern California, generating weekly departures of below -9°F.

At the start of the week, thunderstorms and showers doused the central and southern Plains and mid-Atlantic while a cold front brought chilly air to the West. As the week progressed, hot and moist Gulf air flowed northward into the Plains, raising humidity and pushing temperatures into the nineties. On Tuesday, Denver, CO, reached 99°F, tying its high temperature record for the date set just last year. Strong thunderstorms, with hail and locally heavy hail, pummeled the northern Plains as more thunderstorms raked the South. Tupelo, MS, received a daily record 2.72 inches on Monday.

During the latter half of the week, more thunderstorms erupted from the northern Plains eastward to the upper Great Lakes and along the Gulf Coast. Heavy rains produced local flooding in southern Texas. Strong southwesterly winds

helped temperatures to soar in the Great Plains and Midwest, as triple-digit readings baked the central Plains. In sharp contrast, cool air remained entrenched in the West. In Alaska, lightning-sparked wildfires burned 90,385 acres of the warm, dry interior, according to press reports. At week's end, searing heat and high humidity settled over much of the East, tying or breaking daily high temperature records. The mercury climbed to 97°F in New York and Philadelphia.

According to the River Forecast Centers, the greatest weekly precipitation totals (more than 2 inches) were measured along the eastern and central Gulf Coast and over much of Alabama, Georgia, and Florida (Table 1). Scattered amounts above two inches were reported from the northern High Plains to the upper Great Lakes and in the lower Mississippi and Tennessee Valleys, northern California, the southern Rockies, and Hawaii. Light to moderate amounts fell across the remainders of the lower Mississippi and Tennessee Valleys, the Southeast, the northern Plains, the upper Great Lakes, and in portions of northern California and the northern Intermountain West. Little or no precipitation covered much of Alaska, Hawaii, the Far West, Southwest, Rockies, central and southern Plains, Midwest, and northern and mid-Atlantic, enhancing moisture deficits in the latter region.

Unseasonably warm weather spread from the southern Rockies and southern High Plains across the central Plains, upper and middle Mississippi Valley, and Great Lakes into the Northeast (Table 2). Weekly departures greater than +6°F were found in the southern Rockies, central Plains western Corn Belt, and upper Great Lakes as well as through Alaska, with departures greater than +9°F recorded in the latter state. Temperatures in Hawaii averaged near normal.

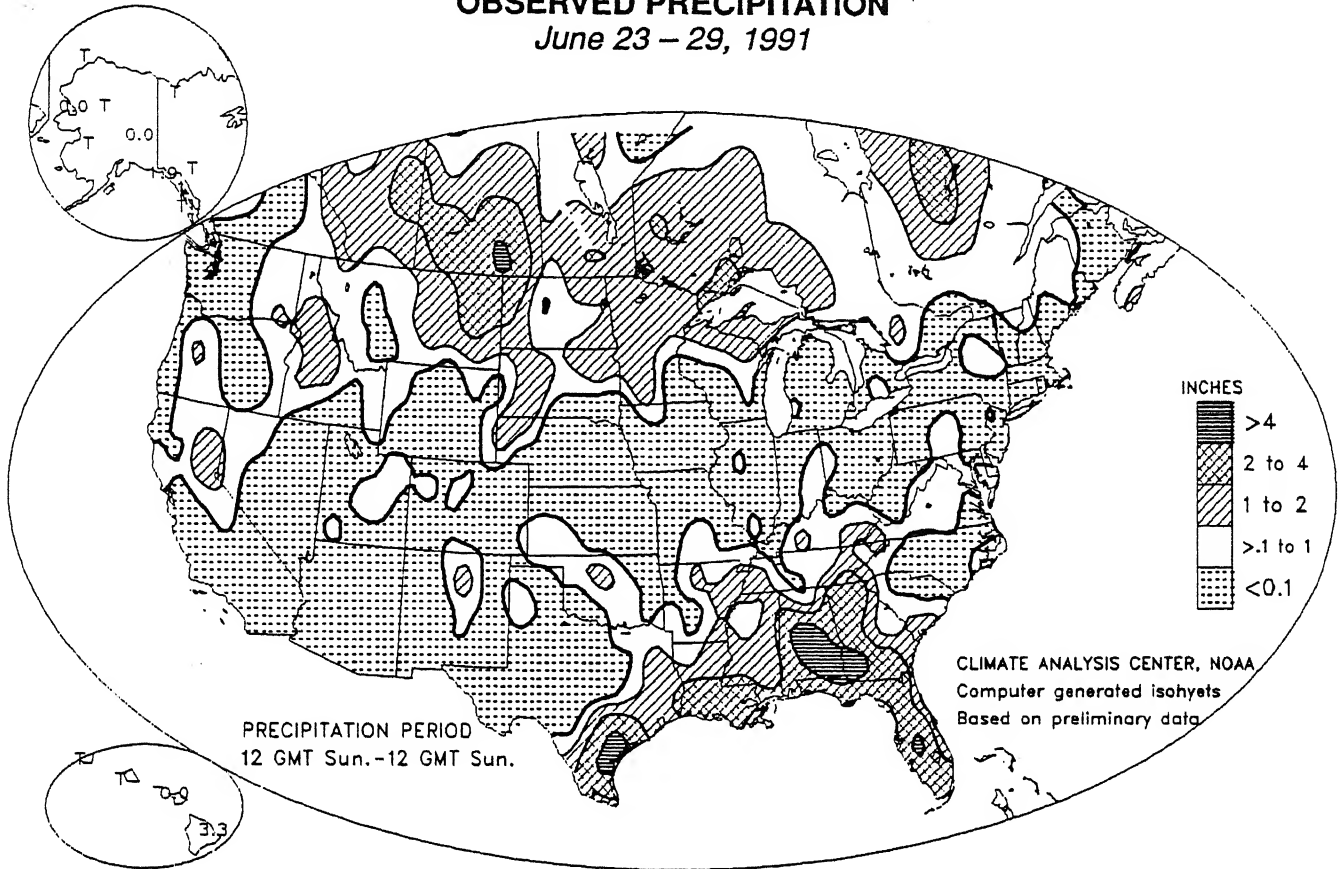
In contrast, unseasonably cool air remained over the western third of the nation, with departures of -7°F common over California and the Great Basin (Table 3). Temperatures also averaged below normal from central Texas to the southern and mid-Atlantic, where departures were below -3°F despite the sizzling heat at the end of the week.

**TABLE 1. SELECTED STATIONS WITH 3.00 OR MORE INCHES OF PRECIPITATION
DURING THE WEEK OF JUNE 23 – 29, 1991**

| <u>STATION</u> | <u>TOTAL</u> (INCHES) | <u>STATION</u> | <u>TOTAL</u> (INCHES) |
|----------------------------|--------------------------|----------------------------|--------------------------|
| ALBANY, GA | 5.90 | DOTHAN, AL | 3.57 |
| WAYCROSS, GA | 5.37 | SAVANNAH/HUNTER AFB, GA | 3.53 |
| VALPARAISO/EGLIN AFB, FL | 4.84 | ORLANDO, FL | 3.45 |
| CORPUS CHRISTI, TX | 4.71 | NEW ORLEANS/LAKE FRONT, LA | 3.39 |
| CENTERVILLE, GA | 4.65 | HILO/LYMAN, HI | 3.33 |
| MONTGOMERY, AL | 4.41 | PENSACOLA, FL | 3.30 |
| VICTORIA, TX | 4.29 | JACKSONVILLE, FL | 3.28 |
| TUSCALOOSA, AL | 4.14 | VALDOSTA/MOODY AFB, GA | 3.19 |
| KINGSVILLE NAS, TX | 4.02 | TALLAHASSEE, FL | 3.18 |
| FORT MYERS, FL | 3.75 | NEW ORLEANS/MOISANT, LA | 3.14 |
| WEST PALM BEACH, FL | 3.68 | OZARK/CAIRNS AFB, AL | 3.05 |
| MONTGOMERY/MAXWELL AFB, AL | 3.68 | WILLISTON, ND | 3.02 |

OBSERVED PRECIPITATION

June 23 – 29, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

June 23 – 29, 1991

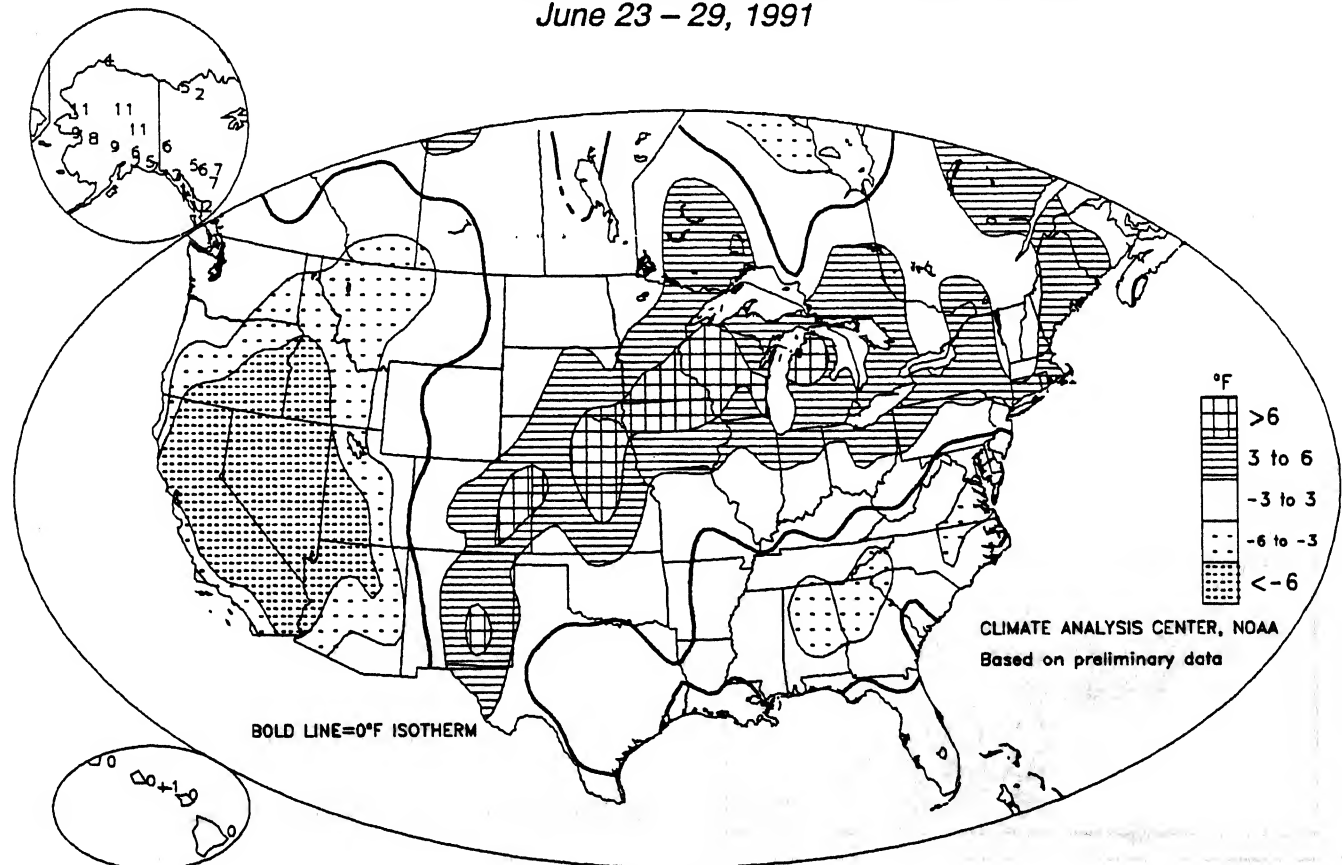


TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 7.0 °F OR MORE ABOVE NORMAL FOR THE WEEK OF JUNE 23 – 29, 1991

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|-------------------|-------------------|-----------------|------------------|-------------------|-----------------|
| KOTZEBUE, AK | +11.5 | 58.9 | UNALAKLEET, AK | +8.1 | 59.1 |
| BETTLES, AK | +11.4 | 71.9 | SPENCER, IA | +8.0 | 79.1 |
| FAIRBANKS, AK | +11.0 | 72.5 | MASON CITY, IA | +7.9 | 78.4 |
| NOME, AK | +9.9 | 57.7 | GRAND ISLAND, NE | +7.8 | 82.0 |
| MCGRATH, AK | +9.2 | 66.6 | BIG DELTA, AK | +7.8 | 67.1 |
| EAU CLAIRE, WI | +9.0 | 77.6 | MINNEAPOLIS, MN | +7.6 | 78.3 |
| TRAVERSE CITY, MI | +8.9 | 75.4 | LA JUNTA, CO | +7.3 | 84.2 |
| LA CROSSE, WI | +8.8 | 79.9 | GOODLAND, KS | +7.3 | 80.2 |
| ROCHESTER, MN | +8.5 | 77.7 | WAUSAU, WI | +7.1 | 74.2 |
| NORFOLK, NE | +8.3 | 81.7 | ERIE, PA | +7.0 | 74.6 |
| MILWAUKEE, WI | +8.1 | 75.9 | | | |

TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 7.0°F OR MORE BELOW NORMAL FOR THE WEEK OF JUNE 23 – 29, 1991

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|-------------------------|-------------------|-----------------|-----------------|-------------------|-----------------|
| BLUE CANYON, CA | -13.2 | 50.2 | SACRAMENTO, CA | -8.4 | 64.8 |
| RED BLUFF, CA | -12.7 | 66.2 | RENO, NV | -8.3 | 57.1 |
| REDDING, CA | -11.6 | 68.1 | LOVELOCK, NV | -8.3 | 61.9 |
| MARYSVILLE/YUBA CO., CA | -10.3 | 65.8 | FRESNO, CA | -8.1 | 69.5 |
| STOCKTON, CA | -10.1 | 64.6 | LAS VEGAS, NV | -8.1 | 78.7 |
| BAKERSFIELD, CA | -9.9 | 71.0 | IMPERIAL, CA | -7.9 | 80.7 |
| CALIENTE, NV | -9.6 | 62.6 | PASO ROBLES, CA | -7.8 | 63.3 |
| DAGGETT, CA | -9.6 | 75.3 | DELTA, UT | -7.7 | 63.2 |
| UKIAH, CA | -9.5 | 61.0 | BURNS, OR | -7.6 | 56.3 |
| MOUNT SHASTA, CA | -8.8 | 55.0 | WINSLOW, AZ | -7.1 | 68.4 |
| BLYTHE, CA | -8.8 | 82.8 | CEDAR CITY, UT | -7.0 | 62.8 |

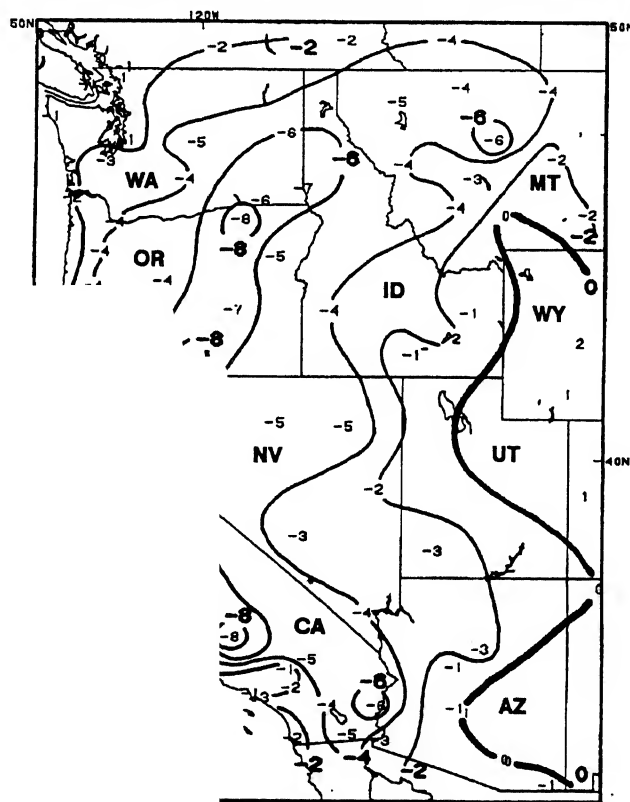
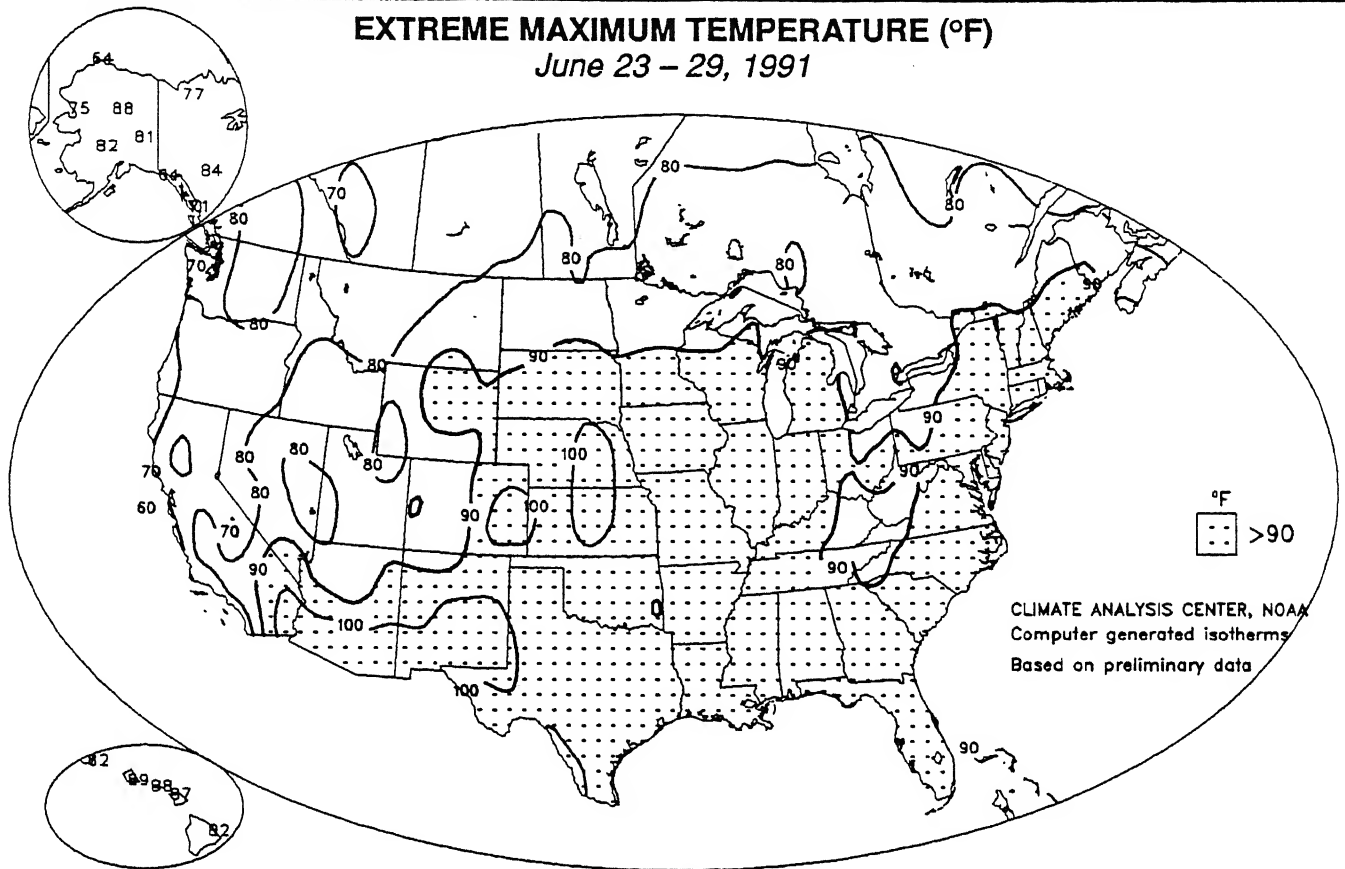


FIGURE 1. Departure of Average Temperature from Normal for June 16 – 29, 1991. *Isopleths drawn only for 0°F, -2°F, -4°F, -6°F, -8°F, and -10°F. Unseasonably chilly air settled into much of the western U.S. during the past two weeks, with departures as low as -10°F recorded in northern California. Readings dipped below freezing in the northeastern Great Basin and across the higher elevations of central Arizona, western Montana, and the southern Cascades while forties extended along the Pacific Coast as far south as Santa Maria, CA.*

EXTREME MAXIMUM TEMPERATURE (°F)

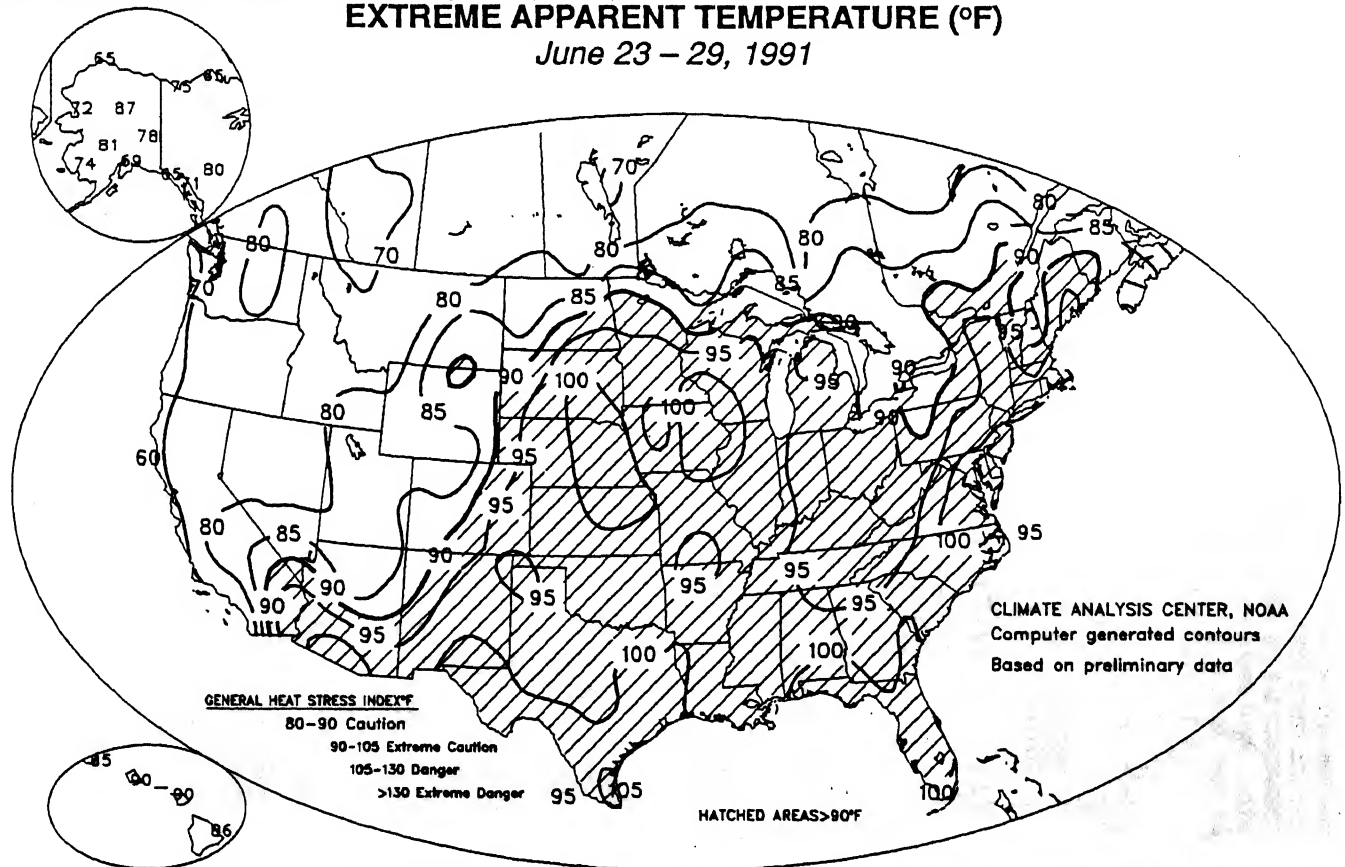
June 23 - 29, 1991



The first full week of summer was marked by a surge of 90°F and above temperatures for much of the eastern two-thirds of the nation, with 100°F and higher readings in the central Great Plains, southern High Plains, and desert Southwest (top). High humidity combined with the heat to produce sweltering conditions in parts of the central and southern Plains, Midwest, Southeast, and mid-Atlantic where apparent temperatures climbed to 100°F and greater (bottom).

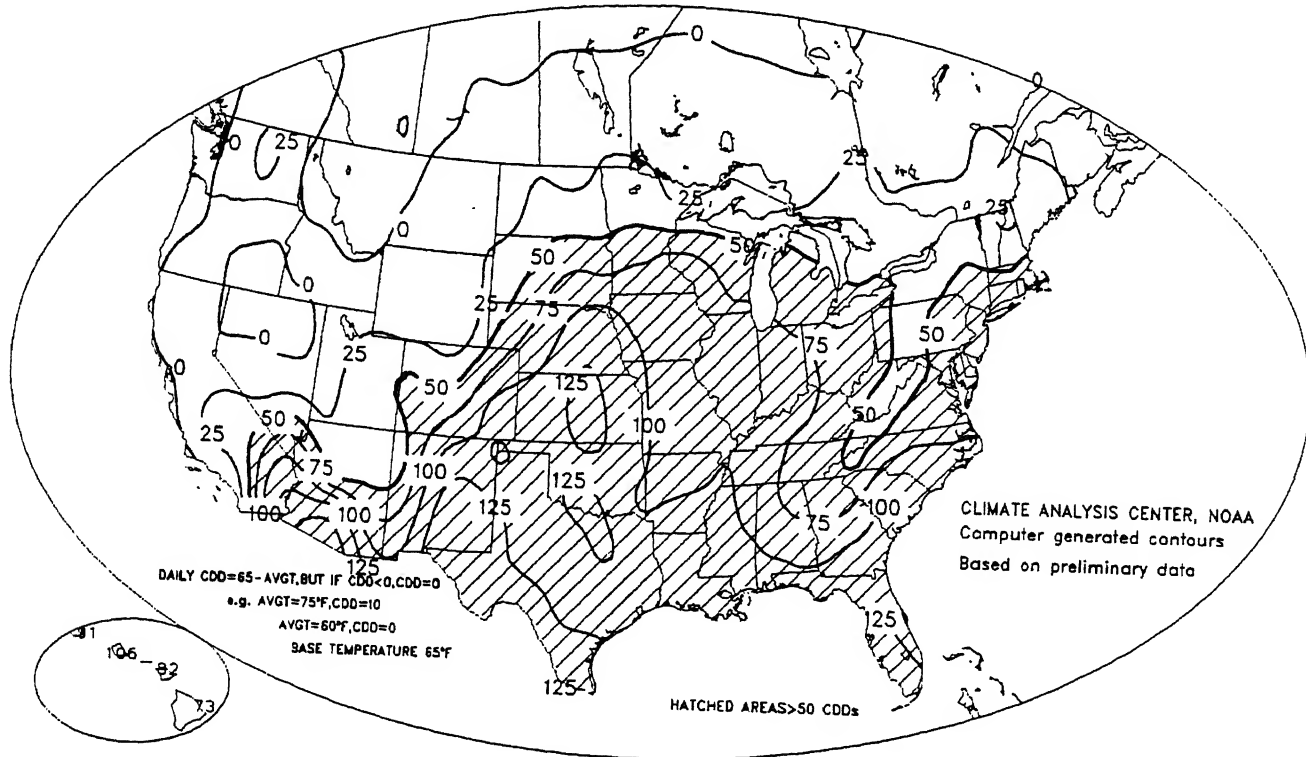
EXTREME APPARENT TEMPERATURE (°F)

June 23 - 29, 1991



WEEKLY TOTAL COOLING DEGREE DAYS

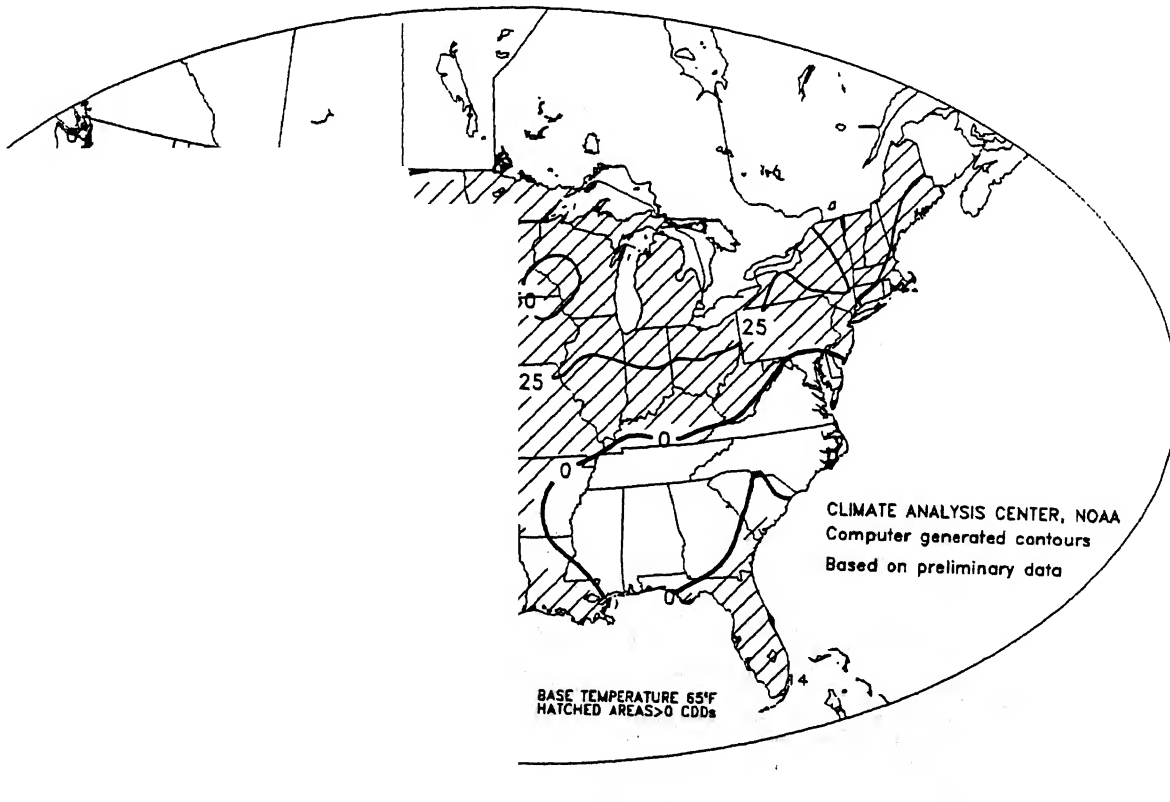
June 23 - 29, 1991



Hot weather generated extensive cooling usage (>100 CDD's) across the Southwest, the central and southern Great Plains, and the lower Mississippi Valley as well as along the South Atlantic and Gulf Coasts (top). In contrast, below normal temperatures allowed for normally light cooling demand across much of the Far West (bottom).

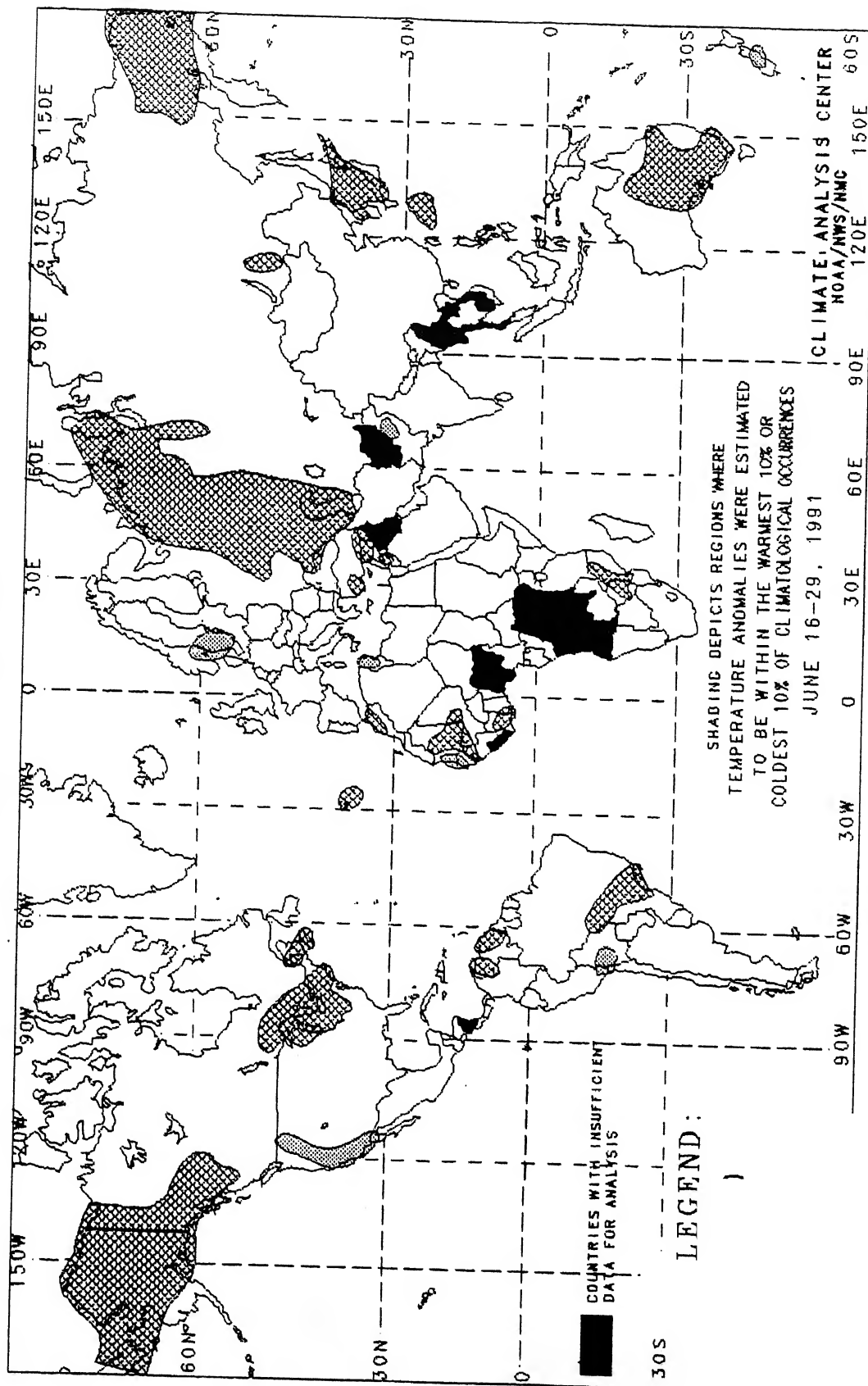
WEEKLY DEPARTURE FROM NORMAL CDD

June 23 - 29, 1991



2-WEEK GLOBAL TEMPERATURE ANOMALIES

JUNE 16 - 29, 1991



Based on approximately 2500 observing stations. Stations were received from synoptic four hour basis so many night time missing observations the estimated values in turn may have resulted in an error.

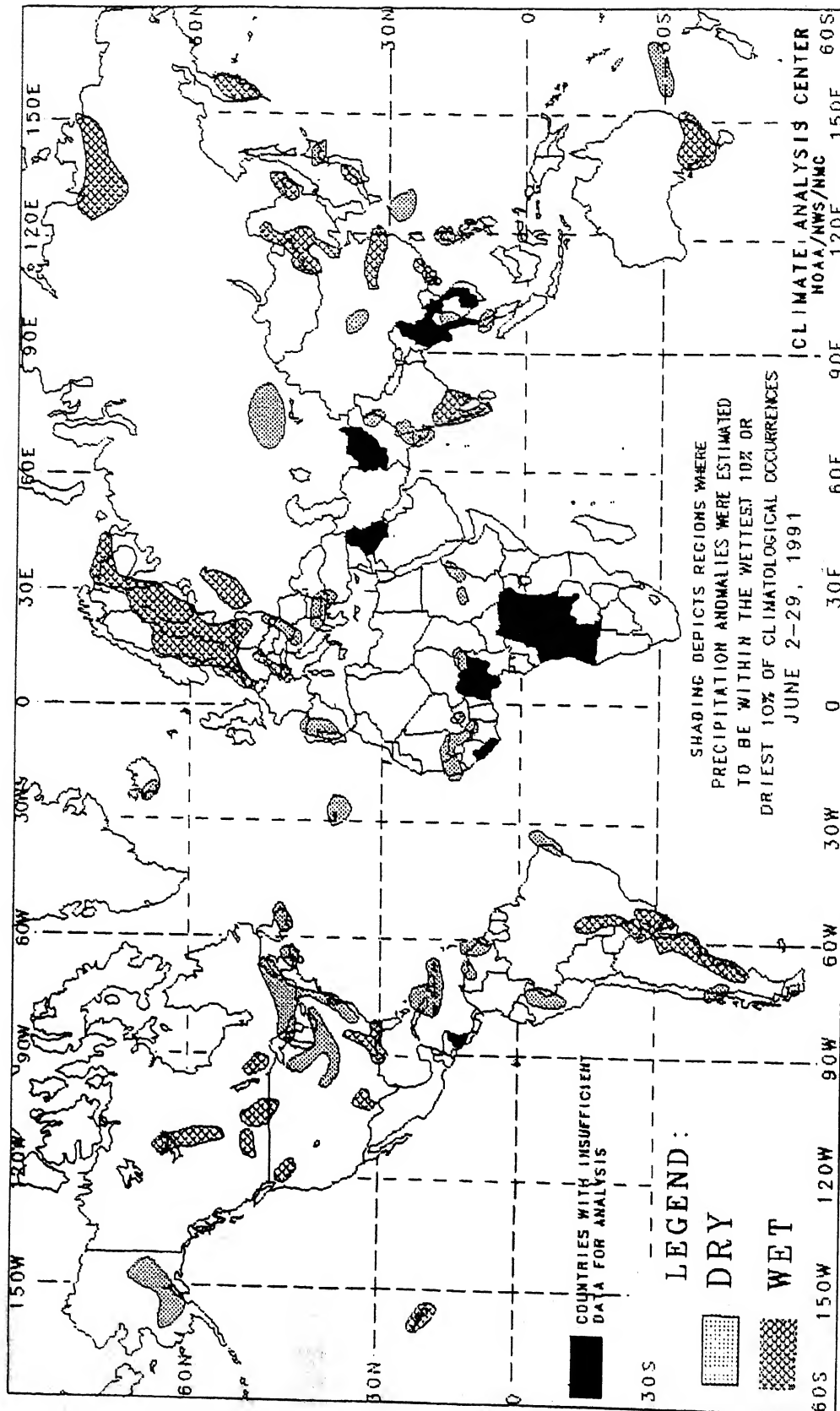
The magnitude of temperature

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

4-WEEK GLOBAL PRECIPITATION ANOMALIES

JUNE 2 - 29, 1991

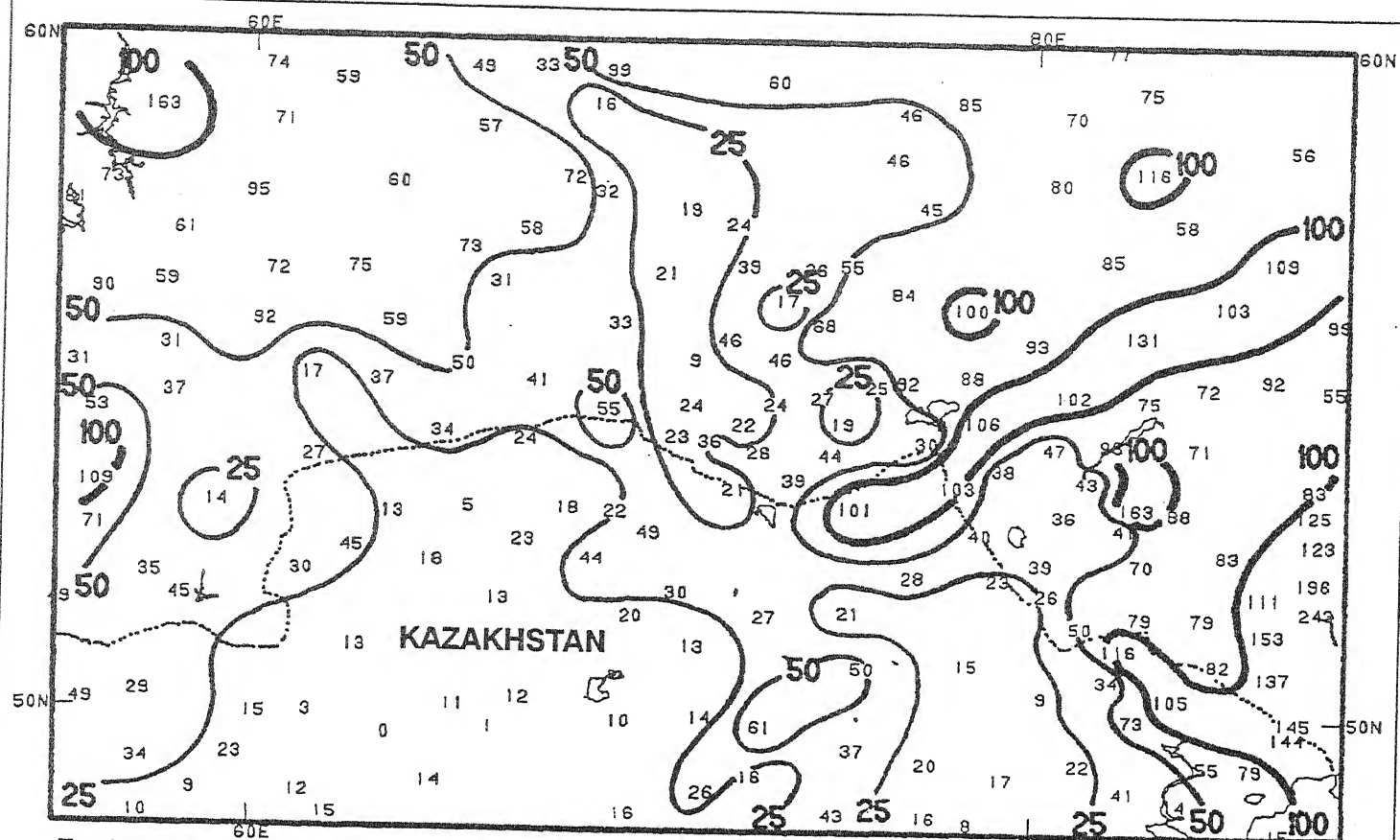


The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.



Total precipitation (mm) during April 7–June 29, 1991 (53 days) [top]. Stations required at least 47 days (90%) for inclusion, and isohyets are only drawn for 25, 50, and 100 mm.

Average temperature departure from normal (°C) during April 7–June 29, 1991 (53 days) [bottom]. Stations required at least 47 days (90%) for inclusion, and isotherms are only drawn for 0°C, +2°C, +4°C, and +6°C.

